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HAHN AND MOODLEY, LLP P.O. BOX 52050 MINNEAPOLIS, MN 55402			EXAMINER WEISS, PAMELA HL	
			ART UNIT 1797	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/583,391	Applicant(s) LAMPRECHT ET AL.	
	Examiner PAMELA WEISS	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. The term "at least" in claim 1 is a relative term which renders the claim indefinite. The term "at least" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear whether "at least" is a particular amount or ratio of n-paraffins and iso-paraffins, whether the iso-paraffins and n-paraffins are to include carbon numbers which may exceed 7 to 14 carbons, or whether the applicant intended to allow additional components to the overall composition as in "comprising".

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-10 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. (US2002/0020107)

Regarding Claims 1 and 3-4

Bailey et al. (US2002/0020107) discloses an improved hydrocarbon based compression ignition fuel which includes hydrocarbons being primarily normal paraffins (Abstract) including heptane, octane, nonane, decane, undecane and dodecane. ([0029] meeting the limitation for C₇-C₁₄ carbon atoms and n-paraffins). Bailey discloses an example of this fuel at Table 4 having an ASTM D86 boiling point of 390°F (Table 4. 390°F=199.89°C falling within the claimed range.) Bailey discloses the fuel may be used in new generation direct injection compression ignition engines or other compression ignition engines without direct injection. ([0033]) Bailey et al. discloses the fuel blends having high cetane numbers such as 66.6 (Example Table 4)

Bailey et al. discloses the claimed fuel, as such, it will intrinsically possess the claimed ignition delay of less than 7 ms, less than 5 ms, between 2 and 5 ms according to ASMT D6890. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially

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identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

“Products of identical chemical composition can not have mutually exclusive properties.”

A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Regarding Claim 2

Bailey discloses the limitations set forth above. Bailey discloses the composition comprising no aromatics, sulfur of 0.004% and ash less than 0.001 wt%. Bailey discloses the composition is 100% paraffin and therefore would possess negligible or zero sulphur. (Table 4 Example 2 and Table 3)

Regarding Claims 5-9

Bailey discloses the limitations set forth above. Bailey also discloses the composition comprising 100% paraffins (Table 3 Example A and E as well as Table 4 Example 2) thus meeting the limitation of claim 5 for the mass % of n-paraffins to exceed any other component, the limitation of claim 6 wherein the n-paraffins are in excess of 25% mass of the fuel, claim 7 wherein the n-paraffins are in excess of 50% mass of the fuel, claim 8 wherein the n-paraffins are in excess of 80% by mass of the fuel and claim 9 wherein the n-paraffins are in the order of 95 % by mass of the fuel.

Regarding Claim 10:

Bailey discloses the limitations set forth above. Bailey also discloses the composition may be obtained from any suitable economic source including Fischer Tropsch syntheses. ([0036]).

Regarding Claim 12

Bailey discloses the limitations set forth above. Bailey also discloses the composition may also comprise a lubricity improver ([0039]).

Regarding Claim 13:

Bailey discloses the limitations set forth above. Bailey also discloses the composition as 100% paraffin and therefore would contain no heteroatoms. (Table 3 Examples A and E and Table 4 Example 2)

Regarding Claim 14:

Bailey discloses the limitations set forth above. Bailey also discloses the composition may comprise light straight run naphtha ([0031]) which may be blended with the paraffinic component. ([0031] meeting the limitation for blending with conventional fuel).

7. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dancuart (US 2002/0179488)

Regarding Claims 15-17:

Dancuart (US 2002/0179488) discloses a synthetic naphtha fuel having cetane numbers in excess of 30 ([0062] cetane numbers being an indication of ignition delay with higher cetane numbers indicating better ignition) and the process for production of

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synthetic naphtha fuel suitable for use in compression ignition engines which includes hydrotreating a Fischer Tropsch condensate ([0031]), hydrocracking at least a fraction of the FT synthesis product ([0033]) and fractionating the hydrocracked components to obtain the desired synthetic naphtha fuel component ([0034]) and blending the components of the fractionated fraction with the components of the hydrotreated fraction in a desired ratio to obtain a synthetic naphtha fuel having desired characteristics for use in a compression ignition engine. ([0035]) Dancuart discloses the blended component may be obtained by mixing the components of the fractionated step with a portion of the hydrotreated condensate in a volume ratio of between 1:24 and 9:1 (within the claimed ratio range).

Dancuart discloses the fuel generated by this process will boil in the range of 30°C to 200°C as measured by the ASTM D86 method ([0038] overlapping the claimed range of 90°C-270°C). Dancuart discloses the fuel composition may comprise 10-100% of the synthetic naphtha fuel created by the process and may also include from 0-90% of one or more diesel fuels. ([0050-0051]). Dancuart discloses the fuel blend may also comprise an additive such as a lubricity improver. ([0058]). Dancuart discloses the main products are linear paraffinic materials but may also include branched paraffins depending on the reactor configuration and operating conditions and the catalyst employed. ([0064]) Dancuart discloses the synthetic FT naphtha as comprising 90.1% n-paraffins and 8.3 iso-paraffins with less than 1 % sulfur and aromatics of 0.1% and a cetane number of 42.7. (Table 5 HTSR). And LTFT having n-paraffins of 59% and isoparaffins of 38.2% with less than 1 % sulfur and aromatics of 0.3% and a cetane

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number of 39.6. (Table 5 LTFT) See MPEP 2144.05(I): "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976)"

8. Claims 1-8, and 10-14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dancuart (US 2002/0179488) as applied to claim 15 above further in view of "Compression-Ignition Fuel Properties of Fischer-Tropsch Syncrude, Suppes, Terry, Burkhardt and Cupps Ind. Eng. Chem. Res. (1998) 37, pp2029-2038 or "Two Stage ignition in HCCI Combustion and HCCI Control by Fuels and Additives", Tanaka, Ayala, Keck, Heywood, Combustion and Flame 132 (2003) pp219-239.

Regarding Claims 1-8, 10-15, and 18

Dancuart (US 2002/0179488) discloses a synthetic naphtha fuel derived from a Fischer Tropsch process (meeting the limitation of claims 10 and 11) having cetane numbers in excess of 30 ([0062] cetane numbers being an indication of ignition delay with higher cetane numbers indicating better ignition) and the process for production of synthetic naphtha fuel suitable for use in compression ignition engines.

Dancuart discloses the process of claims 15-18 as Dancuart discloses making the fuel includes hydrotreating a Fischer Tropsch condensate ([0031]), hydrocracking (meeting the limitation of claim 15(b) and claim 16) at least a fraction of the FT synthesis product ([0033]) and fractionating the hydrocracked components to obtain the desired synthetic naphtha fuel component ([0034]) and blending the components of the fractionated fraction with the components of the hydrotreated fraction in a desired ratio to obtain a synthetic naphtha fuel having desired characteristics for use in a

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compression ignition engine. ([0035] meeting the limitation of claim 17) Dancuart discloses the blended component may be obtained by mixing the components of the fractionated step with a portion of the hydrotreated condensate in a volume ratio of between 1:24 and 9:1 (within the ratio range of 1:99 to 99:1 by volume of claim 17).

Dancuart discloses the fuel generated by this process will boil in the range of 30°C to 200°C as measured by the ASTM D86 method ([0038] overlapping the range of 90°C-270°C of claim 1). Dancuart discloses the fuel composition may comprise 10-100% of the synthetic naphtha fuel created by the process and may also include from 0-90% of one or more diesel fuels. ([0050-0051] and [0103] where the naphtha is blended with diesel meeting the limitation for claim 14). See MPEP 2144.05(I): "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976);"

Dancuart discloses the main products are linear paraffinic materials but may also include branched paraffins depending on the reactor configuration and operating conditions and the catalyst employed. ([0064]) Dancuart discloses the synthetic FT naphtha as comprising 90.1% n-paraffins and 8.3% iso-paraffins with less than 1 % sulfur and aromatics of 0.1% and a cetane number of 42.7. (Table 5 HTSR). Dancuart discloses LTFT having n-paraffins of 59% and isoparaffins of 38.2% with less than 1 % sulfur and aromatics of 0.3% and a cetane number of 39.6. (Table 5 LTFT meeting the limitation of claim 2 for negligible levels of sulfur and less than 1% aromatics). Dancuart discloses the fuel composition may be comprised of 10-100% of the naphtha which may

have paraffin content of 90.1% (Table 5 HTSR) thus meeting the limitations of claims 5, 6, 7, and 8 as to n-paraffin content in excess of 80%. Dancuart discloses the fuel may be 100% of the naphtha thus meeting the limitation that is be substantially free of heteroatoms such as sulfur, nitrogen and oxygen of claim 13. (Table 5)

Dancuart discloses the fuel blend may also comprise an additive such as a lubricity improver. [0058] meeting the limitation of claim 12).

Dancuart does not disclose the paraffinic fuel produced as having n-paraffins and iso-paraffins having from 7 to 14 carbon atoms. However, based on the boiling range, the fuel would inherently comprise carbons of the claimed carbon chain length.

Suppes et al. discloses the use of Fischer Tropsch synthesized fuel which has been hydrocracked in compression ignition engines. (Abstract) Suppes discloses cetane numbers to be a measure of a fuel's ignition quality (P2031, C2 indicating the higher the cetane number the lower the ignition delay). Suppes discloses that the ignition delay is reduced to 7 minutes or less for the C₁₀ paraffin with an increase in time as the carbon chain length grows. (Figure 1) Suppes discloses the Fischer Tropsch syncrude of C₉-C₂₂ paraffins may be blended with other components such as gasoline to provide excellent fuel properties of favorable cetane number (p2037 C1)

Tanaka also discloses the use of both n and iso-paraffinic hydrocarbons including heptane and iso-octane in HCCI engine fuel. P320 C1). Tanaka discloses the ignition delays for n-heptane and being optimal for single state ignition and n-heptane for two stage ignition (P231 Fig. 9)

While Dancuart discloses carbons within the C₇-C₁₄ boiling ranges, it does not expressly set forth the ignition delay time. It would have been obvious to a person having ordinary skill in the art at the time of invention to use the paraffin of lower carbon chain length, such as C₇, C₈ and C₁₀ paraffins as disclosed in Suppes and Tanaka, as they are indicated as suitable for use in HCCI fuel and provide suitable ignition timing of a compression engine.

Modified Dancuart discloses the claimed fuel composition which will intrinsically possess the claimed qualities for ignition delay of less than 7 ms, less than 5 ms and between 2 and 5 ms (thus meeting the limitation of claims 1, 3 and 4). Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

9. Claims 11, 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey (US 2002/0020107) as applied to claim 1 above further in view of Dancuart (US 2002/0179488)

Regarding Claim 11, 15-18:

Bailey discloses the limitations set forth above. Bailey also discloses the fuel may be made by a Fischer Tropsch syntheses including reacting over catalysts in suitable conditions to produce the claimed hydrocarbon products. ([0036]) Bailey also discloses the process conditions and catalyst may be controlled to create n-paraffins. ([0038]).

Bailey does not expressly disclose the step of a) hydrotreating at least condensate fraction of F-T synthesis reaction product or a derivative thereof; b) hydroconverting a wax fraction of the FT synthesis product or a derivative thereof; c) fractionating in a single unit or in separate units, one or more of the hydrotreated condensate fractions of step a) and the hydroconverted fraction of step b) to obtain the desired fuel having from 7 to 14 carbon atoms and ASTMD86 distillation range; or d) optionally blending two or more of said components from step c) in a desired ratio to obtain the desired fuel; or wherein the blending of step d) is the blending of FT condensate derivative and hydroconverted FT wax derivative in a blending ratio of from 1:99 to 99:1 by volume; or wherein the fuel produced by the process is a fuel as in claim 1.

Dancuart discloses the limitations of claims 15-18. The rejection to claims 15-18 in view of Dancuart as set forth above are expressly incorporated herein. Dancuart discloses a method of making a fuel suitable for use in a compression ignition engine comprising normal and iso paraffins.

It would have been obvious to a person having ordinary skill in the art at the time of invention to make the fuel of Bailey by the method of Dancuart as Bailey expressly

provides for the use of Fischer-Tropsch derived fuel and the method of Dancuart makes a Fischer Tropsch derived fuel suitable for use in compression engines.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Unnamed Inventor (Kalghatgi) Applicant Shell International (EP 1371715A1 referred to as Shell). Shell discloses a fuel composition for use in a HCCI engine comprising a gasoline base fuel and a Fischer Tropsch derived gas oil and/or a Fischer Tropsch derived naphtha and a process for preparing the fuel. (Abstract). Shell discloses the Fischer Tropsch gas oil will boiling points within the range of 150-370C ([0026] overlapping the claimed range of 90-270C) and have undetectable levels of sulphur and nitrogen, are low and aromatics, below 1 %w/w to provide lower vehicle emissions. ([0026] and [0035]) Shell discloses the gas oil will be 95 %w/w paraffinic, preferably n- and iso-paraffins with the ratio of iso to normal paraffins greater than 0.3 up to 12 ([0034]) Shell discloses the cetane number will be greater than 70 ([0036])

Shell discloses the fuel is made by a F-T condensation reaction, hydrocracked F-T synthesis product subjected to hydroconversion process ([0037]) Shell discloses the fuel may be made by fractionation of a F-T synthesis product or from a hydrotreated F-T synthesis product which involved hydrocracking to adjust the boiling range and optionally hydrosomerization to yield substantially paraffin hydrocarbon fuel. ([0029])

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAMELA WEISS whose telephone number is (571)270-7057. The examiner can normally be reached on Mon.-Thur. 7:00am-5:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PW

/Glenn A Caldarola/
Acting SPE of Art Unit 1797